

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An anchor for mounting to a hollow wall, comprising a proximal end adapted to be engaged by a rotatable tool to rotate said anchor about a longitudinal axis thereof and to cause it to gradually engage a wall, a distal end adapted to cut through the wall as said anchor is rotated, and a shank between said proximal and distal ends, said shank including at least one expandable leg, said expandable leg being in a collapsed position thereof when said anchor is rotated to mount it to the wall and being located distally past a rear surface of the wall once said anchor is mounted to the wall, said anchor including outer threads, said anchor being adapted to receive therein a threaded fastener and to threadably engage the same distally of said leg such that sufficient rotation of the threaded fastener retracts said distal end towards said proximal end thereby causing said leg to displace to a laterally expanded position thereof.
2. An anchor as defined in Claim 1, wherein said anchor is made of a molded unitary construction.
3. An anchor as defined in Claim 1, wherein said shank comprises, distally of said leg, a tubular section adapted to be tapped by the threaded fastener.
4. An anchor as defined in Claim 1, wherein said shank comprises, distally of said leg, a tubular section defining a first inner thread adapted to be threadably engaged by the threaded fastener.
5. An anchor as defined in Claim 4, wherein said distal end defines a second inner thread adapted to be threadably engaged by the threaded fastener.
6. An anchor as defined in Claim 5, wherein said first and second inner threads are substantially continuous and have a same pitch.

7. An anchor as defined in Claim 5, wherein said distal end defines an opening through which the threaded fastener can extend.

8. An anchor as defined in Claim 1, wherein said outer threads include a first outer thread provided on said shank between said proximal end and said leg and engaged in the wall when said anchor is in said first position.

9. An anchor as defined in Claim 8, wherein said outer threads include a second outer thread provided between said leg and said distal end.

10. An anchor as defined in Claim 9, wherein said shank comprises, distally of said leg, a tubular section adapted to be threadably engaged by the threaded fastener, said second outer thread being provided around said tubular section.

15. 11. An anchor as defined in Claim 8, wherein said outer threads include a third outer thread provided around said leg, said first, second and third outer threads having a same pitch.

20. 12. An anchor as defined in Claim 9, wherein there are provided at least two said legs adapted to extend in different directions in said expanded position, said third outer thread extending all of said legs in said collapsed position.

25. 13. An anchor as defined in Claim 1, wherein said proximal end comprises a flanged head defining a recess for engageably receiving the rotatable tool.

14. An anchor as defined in Claim 1, wherein there are provided at least two said legs, said legs extending substantially parallelly in said collapsed position.

30. 15. An anchor as defined in Claim 14, wherein said legs are connected together in said collapsed position by frangible elements adapted to rupture when the threaded fastener draws said distal end towards said proximal end, thereby allowing said legs to deploy to said expanded position.

16. An anchor as defined in Claim 14, wherein said outer threads include a third outer thread provided around said legs, and adapted in said expanded position to extend at least partly into the rear surface of the wall.

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17. An anchor as defined in Claim 15, wherein said outer threads include a third outer thread provided around said legs and interrupted at least at said frangible elements.

10 18. An anchor as defined in Claim 14, wherein each said leg comprises a distal and a proximal section adapted to outwardly fold when passing from said collapsed to said expanded positions.

15 19. An anchor as defined in Claim 18, wherein said proximal and distal sections are connected by a pivot.

20. An anchor as defined in Claim 19, wherein said distal section is longer than said proximal section at least in said collapsed position, such that, in said expanded position, said proximal section extends outwardly at least partly along the rear surface of the wall, whereas said distal section extends from said proximal section inwardly towards said distal end.

25 21. An anchor as defined in Claim 19, wherein said distal and proximal sections are substantially of a same length at least in said collapsed position, such that, in said expanded position, said proximal and distal sections extend outwardly in substantially close relationship.

30 22. An anchor as defined in Claims 14 to 21, wherein there are provided four said legs, said legs being similar and being disposed such as to deploy in a substantially cruciform pattern.

23. An anchor as defined in Claim 1, wherein said shank includes at least one stopper adapted, in said expanded position of said leg, to engage the rear surface of the wall or a proximal section of said shank disposed proximally of said leg to limit a displacement of said distal end towards said proximal end and thus to limit an expansion of said leg in said expanded position, said stopper, in said collapsed position, being provided distally on said shank relative to said proximal section of said shank.

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24. An anchor as defined in Claim 23, wherein said shank comprises a distal section located between said leg and said distal end, said stopper including a tubular element extending from said distal section of said shank towards said proximal section thereof and being spaced therefrom in said collapsed position of said leg, said tubular element being adapted to displace towards said proximal section during deployment of said leg to said expanded position.

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25. An anchor as defined in Claim 24, wherein said tubular element is adapted to be tapped by the threaded fastener.

26. An anchor as defined in Claim 23, wherein said shank comprises a distal section located between said leg and said distal end, said stopper including at least one tab extending rearwardly from said distal section of said shank towards said proximal section thereof and being spaced therefrom in said collapsed position of said leg, said tab being adapted to displace towards said proximal section during deployment of said leg to said expanded position.

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27. An anchor as defined in Claim 1, wherein said expandable leg is adapted, in said expanded position, to form a bundle behind the wall.

28. An anchor as defined in Claim 27, wherein there are provided more than one said legs, said legs extending alongside each other in a twisting configuration and forming together a tube, with frangible portions being defined on said tube and between said legs, said frangible portions being adapted to rupture when the threaded

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fastener draws said distal end towards said proximal end, thereby allowing said legs to deploy into said bundle.

29. An anchor as defined in Claim 1, wherein said shank includes at least one  
5 stopper adapted, in said expanded position of said leg, to limit a displacement of said  
distal end towards said proximal end and thus to limit an expansion of said leg in said  
expanded position.

30. An anchor as defined in Claim 29, wherein said stopper, in said collapsed  
10 position, extends substantially parallelly to said expandable leg, and is adapted to  
bend, when said distal end displaces towards said proximal end, but only up to certain  
limit whereat said distal end cannot be further moved towards said proximal end and  
said expandable leg is in said expanded position.

15 31. An anchor as defined in Claim 1, wherein said expandable leg is spring loaded  
in said collapsed position, cooperating means being provided on said expandable leg  
and said shank to retain said expandable leg in said collapsed position, said  
cooperating means being disengaged when the threaded fastener displaces said  
expandable leg axially away from said proximal end, thereby allowing said  
20 expandable leg to deploy under spring bias to said expanded position.

32. An anchor assembly for mounting to a hollow wall, comprising a threaded  
fastener and an anchor; said anchor including a proximal end adapted to be engaged  
by a rotatable tool to rotate said anchor about a longitudinal axis thereof and to cause  
25 it to gradually engage a wall, a distal end adapted to cut through the wall as said  
anchor is rotated, and a shank between said proximal and distal ends, said shank  
including at least one expandable leg, said expandable leg being in a collapsed  
position thereof when said anchor is rotated to mount it to the wall and being located  
30 distally past a rear surface of the wall once said anchor is mounted to the wall, said  
anchor including outer threads, said anchor being adapted to receive therein said  
threaded fastener and to threadably engage the same distally of said leg such that  
sufficient rotation of said threaded fastener retracts said distal end towards said

proximal end thereby causing said leg to displace to a laterally expanded position thereof.

33. An anchor assembly as defined in Claim 32, wherein said anchor is made of a  
5 molded unitary construction.

34. An anchor assembly as defined in Claim 32, wherein said shank comprises,  
distally of said leg, a tubular section adapted to be tapped by said threaded fastener.

10 35. An anchor assembly as defined in Claim 32, wherein said shank comprises,  
distally of said leg, a tubular section defining a first inner thread adapted to be  
threadably engaged by said threaded fastener.

15 36. An anchor assembly as defined in Claim 35, wherein said distal end defines a  
second inner thread adapted to be threadably engaged by said threaded fastener.

37. An anchor assembly as defined in Claim 36, wherein said first and second  
inner threads are substantially continuous and have a same pitch.

20 38. An anchor assembly as defined in Claim 36, wherein said distal end defines an  
opening through which said threaded fastener can extend.

25 39. An anchor assembly as defined in Claim 32, wherein said outer threads  
include a first outer thread provided on said shank between said proximal end and said  
leg and engaged in the wall when said anchor is in said first position.

40. An anchor assembly as defined in Claim 39, wherein said outer threads  
include a second outer thread provided between said leg and said distal end.

30 41. An anchor assembly as defined in Claim 40, wherein said shank comprises,  
distally of said leg, a tubular section adapted to be threadably engaged by said  
threaded fastener, said second outer thread being provided around said tubular section.

42. An anchor assembly as defined in Claim 39, wherein said outer threads include a third outer thread provided around said leg, said first, second and third outer threads having a same pitch.

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43. An anchor assembly as defined in Claim 40, wherein there are provided at least two said legs adapted to extend in different directions in said expanded position, said third outer thread extending all of said legs in said collapsed position.

10 44. An anchor assembly as defined in Claim 32, wherein said proximal end comprises a flanged head defining a recess for engageably receiving the rotatable tool.

15 45. An anchor assembly as defined in Claim 32, wherein there are provided at least two said legs, said legs extending substantially parallelly in said collapsed position.

20 46. An anchor assembly as defined in Claim 45, wherein said legs are connected together in said collapsed position by frangible elements adapted to rupture when said threaded fastener draws said distal end towards said proximal end, thereby allowing said legs to deploy to said expanded position.

47. An anchor assembly as defined in Claim 45, wherein said outer threads include a third outer thread provided around said legs, and adapted in said expanded position to extend at least partly into the rear surface of the wall.

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48. An anchor assembly as defined in Claim 46, wherein said outer threads include a third outer thread provided around said legs and interrupted at least at said frangible elements.

30 49. An anchor assembly as defined in Claim 45, wherein each said leg comprises a distal and a proximal section adapted to outwardly fold when passing from said collapsed to said expanded positions.

50. An anchor assembly as defined in Claim 49, wherein said proximal and distal sections are connected by a pivot.

5 51. An anchor assembly as defined in Claim 50, wherein said distal section is longer than said proximal section at least in said collapsed position, such that, in said expanded position, said proximal section extends outwardly at least partly along the rear surface of the wall, whereas said distal section extends from said proximal section inwardly towards said distal end.

10 52. An anchor assembly as defined in Claim 50, wherein said distal and proximal sections are substantially of a same length at least in said collapsed position, such that, in said expanded position, said proximal and distal sections extend outwardly in substantially close relationship.

15 53. An anchor assembly as defined in Claims 45 to 50, wherein there are provided four said legs, said legs being similar and being disposed such as to deploy in a substantially cruciform pattern.

20 54. An anchor assembly as defined in Claim 32, wherein said shank includes at least one stopper adapted, in said expanded position of said leg, to engage the rear surface of the wall or a proximal section of said shank disposed proximally of said leg to limit a displacement of said distal end towards said proximal end and thus to limit an expansion of said leg in said expanded position, said stopper, in said collapsed position, being provided distally on said shank relative to said proximal section of said shank.

25 55. An anchor assembly as defined in Claim 54, wherein said shank comprises a distal section located between said leg and said distal end, said stopper including a tubular element extending from said distal section of said shank towards said proximal section thereof and being spaced therefrom in said collapsed position of said

leg, said tubular element being adapted to displace towards said proximal section during deployment of said leg to said expanded position.

56. An anchor assembly as defined in Claim 55, wherein said tubular element is  
5 adapted to be tapped by said threaded fastener.

57. An anchor assembly as defined in Claim 54, wherein said shank comprises a  
distal section located between said leg and said distal end, said stopper including at  
least one tab extending rearwardly from said distal section of said shank towards said  
10 proximal section thereof and being spaced therefrom in said collapsed position of said  
leg, said tab being adapted to displace towards said proximal section during  
deployment of said leg to said expanded position.

58. An anchor assembly as defined in Claim 32, wherein said expandable leg is  
15 adapted, in said expanded position, to form a bundle behind the wall.

59. An anchor assembly as defined in Claim 58, wherein there are provided more  
than one said legs, said legs extending alongside each other in a twisting configuration  
and forming together a tube, with frangible portions being defined on said tube and  
20 between said legs, said frangible portions being adapted to rupture when said threaded  
fastener draws said distal end towards said proximal end, thereby allowing said legs to  
deploy into said bundle.

60. An anchor assembly as defined in Claim 32, wherein said shank includes at  
25 least one stopper adapted, in said expanded position of said leg, to limit a  
displacement of said distal end towards said proximal end and thus to limit an  
expansion of said leg in said expanded position.

61. An anchor assembly as defined in Claim 60, wherein said stopper, in said  
30 collapsed position, extends substantially parallelly to said expandable leg, and is  
adapted to bend, when said distal end displaces towards said proximal end, but only

up to certain limit whereat said distal end cannot be further moved towards said proximal end and said expandable leg is in said expanded position.

62. An anchor assembly as defined in Claim 32, wherein said expandable leg is  
5 spring loaded in said collapsed position, cooperating means being provided on said expandable leg and said shank to retain said expandable leg in said collapsed position, said cooperating means being disengaged when said threaded fastener displaces said expandable leg axially away from said proximal end, thereby allowing said expandable leg to deploy under spring bias to said expanded position.

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63. An anchor for mounting to a hollow wall, comprising a proximal end adapted to be engaged by a rotatable tool to rotate said anchor about a longitudinal axis thereof and to cause it to gradually engage a wall, a distal end and a shank between said proximal and distal ends, said shank including at least one expandable means, said  
15 expandable means being in a collapsed position thereof when said anchor is rotated to mount it to the wall, said anchor including outer threads, said anchor being adapted to receive therein a threaded fastener and to threadably engage the same distally of said expandable means such that sufficient rotation of the threaded fastener retracts said distal end towards said proximal end thereby causing said expandable means to  
20 displace to a laterally expanded position thereof behind the wall.

64. A method for mounting an anchor to a hollow wall, comprising the steps of:

- a) providing a hollow anchor including outer threads and having a proximal end, a distal end and a shank between said proximal and distal ends;
- 25 b) installing said anchor in a wall; and
- c) rotatably driving a threaded fastener in said anchor such that said threaded fastener engages distal end and causes, once said fastener cannot further advance translationally in said anchor, said distal end to retract towards said proximal end thereby deforming said shank such that said shank laterally expands behind the wall.

65. A method for forming inner threads in a hollow anchor adapted for a hollow wall, comprising the steps of:

- a) providing a core pin having outside threads thereon;
- b) molding an anchor in a mold with said core pin therein such that said core pin is at least partly surrounded by plastic; and
- c) translationally removing said core pin, without substantially rotating it, from the molded anchor without stripping the female threads formed by said core pin in said anchor.

10 66. A method as defined in Claim 65, wherein in step b), a second pin having outside threads thereon is provided in said mold, said second pin being axially aligned with said core pin in an end-to-end relationship, with said core pin and said second pin defining a substantially continuous thread, of a same pitch, thereby forming a female thread in said anchor that is longer than without said second pin.

15 67. A method as defined in Claim 66, wherein in step c), said core pin is translationally removed from the molded anchor from a proximal end of said molded anchor, and said second pin is laterally removed from a distal end of said anchor.

20 68. A method as defined in Claim 66, wherein said core pin and said second pin have mating ends for obtaining in step b), a predetermined relative position between said core pin and said second pin and thus ensuring said continuous thread.